IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application		)	PATENT APPLICATION
Inventors:	Jung W. Lee	)	
		)	Art Unit: 3747
Application No.:	10/627,455	)	
		)	Examiner: Harris, K.
Filed Date:	July 25, 2003	)	
		)	
Title:	SPHERICAL ROTARY ENGINE VALVE ASSEMBLY	)	Customer No.: **28554**
		)	

CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8
I hereby certify that this correspondence is being deposited in the United States Postal Service with sufficient postage as first class mail in an envelope addressed to **Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450**, on January 11, 2006.

(Attorney Signature)
Brian I. Marcus, Reg. No. 34,511
Signature Date: January 11, 2006

REQUEST FOR WITHDRAWAL OF ABANDONMENT

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sirs:

This transmittal is in reply to the Notice of Abandonment mailed on December 29, 2005. The Notice of Abandonment alleges that the U.S. Patent Office did not receive a Response to the Office Action mailed on June 16, 2005. However, a Response to the Office Action was timely mailed on December 16, 2005, as evidenced by copies of the following documents:

- Transmittal Form;
- Fee Transmittal;
- Petition for Extension of Time;
- Credit Card Payment Form;
- Response to Office Action; and
- Postcard stamped received on December 19, 2005 by the OIPE.

The Commissioner is authorized to charge any underpayment to Deposit Account No. 501826 for any matter in connection with this transmittal which may be required.

Should any further questions remain, the Examiner is invited to contact the undersigned attorney.

Respectfully submitted,

Date: January 11, 2006

By: _____

Brian I. Marcus
Reg. No. 34,511

VIERRA MAGEN MARCUS HARMON & DENIRO LLP
685 Market Street, Suite 540
San Francisco, California 94105-4206
Telephone: (415) 369-9660 x204
Facsimile: (415) 369-9665

PTO/SB/21 (09-04)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Application Number	10/627,455
Filing Date	July 25, 2003
First Named Inventor	Lee
Art Unit	3747
Examiner Name	Harris, K.
Attorney Docket Number	JWLE-01000US0

ENCLOSURES *(Check all that apply)*

- ☑ Fee Transmittal Form
  - ☑ Fee Attached
- ☑ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☑ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) _____
  - ☐ Landscape Table on CD
- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☑ Other Enclosure(s) (please Identify below):

Postcard

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Brian I. Marcus, Esq., Vierra Magen Marcus Harmon & DeNiro LLP		
Signature			
Printed name	Brian I. Marcus		
Date	December 16, 2005	Reg. No.	34,511

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature			
Typed or printed name	Brian I. Marcus	Date	December 16, 2005

PTO/SB/17 (12-04)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Effective on 12/08/2004.
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL
For FY 2005

☑ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT	($) 510.00

Complete if Known	
Application Number	10/627,455
Filing Date	July 25, 2003
First Named Inventor	Lee
Examiner Name	Harris, K.
Art Unit	3747
Attorney Docket No.	JWLE-01000US0

METHOD OF PAYMENT (check all that apply)

☐ Check ☑ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☑ Deposit Account Deposit Account Number: 501826 Deposit Account Name: Vierra Magen Marcus Harmon & DeNiro LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**

☑ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☑ Credit any overpayments

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES Fee ($)	FILING FEES Small Entity Fee ($)	SEARCH FEES Fee ($)	SEARCH FEES Small Entity Fee ($)	EXAMINATION FEES Fee ($)	EXAMINATION FEES Small Entity Fee ($)	Fees Paid ($)
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee ($)	Fee Paid ($)
_____ - 20 or HP =	_____	x _____	= 0

HP = highest number of total claims paid for, if greater than 20

Indep. Claims	Extra Claims	Fee ($)	Fee Paid ($)
_____ - 3 or HP =	_____	x _____	= 0

HP = highest number of independent claims paid for, if greater than 3

Multiple Dependent Claims Fee ($)	Fee Paid ($)
_____	_____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee ($)	Fee Paid ($)
_____ - 100 =	_____	/ 50 = _____ (round up to a whole number) x	_____	= 0

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	
Other: 3 mo. extension of time	510.00

SUBMITTED BY

Signature		Registration No. (Attorney/Agent) 34,511	Telephone 415-369-9660
Name (Print/Type)	Brian T. Marcus		Date December 16, 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application		)	PATENT APPLICATION
Inventors:	Jung W. Lee	)	
Application No.:	10/627,455	)	Art Unit: 3747
Filed Date:	July 25, 2003	)	Examiner: Harris, K.
Title:	SPHERICAL ROTARY ENGINE VALVE ASSEMBLY	)	Customer No.: **28554**

CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8

I hereby certify that this correspondence is being deposited in the United States Postal Service with sufficient postage as first class mail in an envelope addressed to **Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450**, on December 16, 2005.

_____ (Attorney Signature)
Brian I. Marcus, Reg. No. 34,511
Signature Date: December 16, 2005

RESPONSE B TO OFFICE ACTION UNDER 37 C.F.R. §1.111

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This RESPONSE B is in reply to the Office Action mailed June 16, 2005.

AMENDMENTS to the CLAIMS begin on Page *Kobayashi* of this RESPONSE.

REMARKS begin on Page *Kobayashi* of this RESPONSE.

Attorney Docket No.: JWLE-01000US0
jwle/1000/1000.response-002

Amendments To The Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (previously presented) A spherical rotary engine valve assembly for a combustion cylinder in an internal combustion engine, comprising:

a valve mounted for rotation and having a spherical shape with an opening formed within an outer surface of the valve, the opening having a shaped surface including a convex portion and a concave portion;

a seal having a first and second rings for sealing an interface between said valve and the combustion chamber, a force exerted on a portion of said first ring causing a force between said second ring and said valve outer surface; and

a contoured piston head formed on a piston operating within the combustion chamber, said contoured piston head having a first concave section generally conforming to a shape of said valve, and a second concave section having a deeper recess than said first concave section.

2. (previously presented) A spherical rotary engine valve assembly as recited in claim 1, further comprising a valve housing positioned adjacent said valve on a side of said valve generally opposite from the cylinder, a gap being defined between said valve and said valve housing, said valve housing including a trench for preventing a flow of gas in a direction within said gap.

3. (previously presented) A rotary engine valve, comprising:

a spherical surface over a majority of said rotary engine valve, said spherical surface capable of substantially sealing the opening to the combustion chamber against fluid flow into or out of the combustion chamber as the spherical surface is positioned over the combustion chamber during rotation of the rotary engine valve; and

a shaped section having a surface with a different curvature than said spherical surface, the shaped section including a leading edge and a trailing edge, the leading edge capable of opening to the intake manifold and the combustion chamber before the trailing edge during rotation of the rotary engine valve, said shaped section capable of allowing fluid flow from the intake manifold into the combustion chamber when the leading edge of the

shaped section rotates past the intake manifold, portions of the shaped section adjacent the leading edge having a concave shape for enhancing initial volumetric fluid flow from the intake manifold into the combustion chamber as the leading edge rotates past the intake manifold.

4. (previously presented) A rotary engine valve as recited in claim 7, the rotary engine valve further capable of allowing fluid flow from the combustion chamber to an exhaust manifold, the shaped section capable of allowing fluid flow from the combustion chamber to the exhaust manifold when the leading edge of shaped section rotates past the combustion chamber, the concave shape of the portions of the shaped section adjacent the leading edge capable of enhancing initial volumetric fluid flow from the combustion chamber into the exhaust manifold as the leading edge rotates past the combustion chamber.

5. (previously presented) A rotary engine valve as recited in claim 7, the trailing edge of the shaped section compressing the fluid in the combustion chamber as the trailing edge rotates past the combustion chamber.

6. (previously presented) A rotary engine valve as recited in claim 7, the shaped section getting narrower from the leading edge to the trailing edge for promoting turbulent flow of the fluid entering the combustion chamber.

7. (previously presented) A rotary engine valve assembly, comprising:

a rotary engine valve rotating about a reference axis, the rotary engine valve capable of sealing an opening to a combustion chamber, and the rotary engine valve capable of allowing fluid flow from an intake manifold into the combustion chamber, the rotary engine valve including:

a spherical surface over a majority of said rotary engine valve, said spherical surface capable of substantially sealing the opening to the combustion chamber against fluid flow into or out of the combustion chamber as the spherical surface is positioned over the combustion chamber during rotation of the rotary engine valve, and

a shaped section having a surface with a different curvature than said spherical surface, the shaped section including a leading edge and a trailing edge, the leading edge capable of opening to the intake manifold and the combustion chamber before the trailing edge during rotation of the rotary engine valve, portions of the shaped section adjacent the leading edge having a concave shape for enhancing initial volumetric fluid flow from the intake manifold into the combustion chamber as the leading edge rotates past the intake manifold.

8. (previously presented) A rotary engine valve assembly as recited in claim 7, the rotary engine valve further capable of allowing fluid flow from the combustion chamber to an exhaust manifold, the concave shape of the portions of the shaped section adjacent the leading edge capable of enhancing initial volumetric fluid flow from the combustion chamber into the exhaust manifold as the leading edge rotates past the combustion chamber.

9. (previously presented) A rotary engine valve assembly as recited in claim 8, further comprising a valve housing generally surrounding the rotary engine valve, a gap being defined between the valve housing and the rotary engine valve, the valve housing including a trench for preventing a flow of fluid within the gap between the exhaust manifold and the combustion chamber.

10. (previously presented) A rotary engine valve assembly as recited in claim 7, the trailing edge of the shaped section compressing the fluid in the combustion chamber as the trailing edge rotates past the combustion chamber.

11. (previously presented) A rotary engine valve assembly as recited in claim 7, further comprising a piston head on a piston reciprocating within the combustion chamber, the piston head including a first concave area generally matching the curvature of the spherical section, and a second concave area having a greater concavity than the first concave area.

12. (previously presented) A rotary engine valve assembly as recited in claim 7, further comprising a seal having a first and second rings for sealing an opening between said spherical portion of the rotary engine valve and the combustion chamber, a force exerted on a

portion of said first ring causing a force between said second ring and the spherical portion of the rotary engine valve.

13. (previously presented) A rotary engine valve assembly as recited in claim 7, further comprising an air runner within the intake manifold, the air runner capable of directing fluid to the portions of the shaped section adjacent the leading edge after the leading edge passes by the air runner.

REMARKS

The above Amendments and these Remarks are in reply to the Office Action mailed June 16, 2005. Claims 1-13 are presented herewith for consideration.

Currently, claims 1 – 13 are pending. Applicants respectfully request reconsideration of claims 1-13.

I. Rejection of Claims 1-13 Under 35 U.S.C. 103(a)

Claims 1 – 13 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,415,756 to Lee ("*Lee*") in view of U.S. Patent No. 6,651,612 to Kobayashi ("*Kobayashi*").

Applicant notes that *Kobayashi* has an earliest effective 102(e) priority date of August 7, 2002. The filing date of the foreign priority document may not be used as the effective filing date of the reference for 102(e) priority purposes. The present application claims priority under 35 U.S.C. §119(e) to a provisional application having a filing date of July 25, 2002.

Therefore, the present application has an earliest effective filing date prior to that of *Kobayashi*, and accordingly, *Kobayashi* is not prior art with respect to the present invention.

Moreover, even if *Kobayashi* were considered against the claims of the present application, applicant respectfully disagrees with the Examiner's characterization of the disclosure of *Kobayashi*. The Examiner has merely repeated the claim elements relating to the piston head supposedly found in *Kobayashi*, without in fact pointing specifically where in *Kobayashi* the recited claim elements are found. In fact, *Kobayashi* nowhere discloses, teaches or suggests:

> a contoured piston head ... having a first concave section generally conforming to a shape of said valve, and a second concave section having a deeper recess than said first concave section.

Kobayashi does not disclose or suggest a first concave section generally conforming to a shape of the valve, and *Kobayashi* does not disclose or suggest a second concave section having a deeper recess than the first concave section.

Without such a disclosure, the combination of *Lee* and *Kobayashi* does not teach or suggest the claimed invention, even if *Kobayashi* were considered prior art against the present invention.

Based on the above amendments and these remarks, reconsideration of Claims 1-13 is respectfully requested.

The Examiner's prompt attention to this matter is greatly appreciated. Should further questions remain, the Examiner is invited to contact the undersigned attorney by telephone.

Enclosed is a PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. § 1.136 for extending the time to respond up to and including today, December 16, 2005.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 501826 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

Date: December 16, 2005

By: _____
Brian J. Marcus
Reg. No. 34,511

VIERRA MAGEN MARCUS HARMON & DENIRO LLP
685 Market Street, Suite 540
San Francisco, CA 94105-4206
Telephone: (415) 369-9660
Facsimile: (415) 369-9665

The United States Patent and Trademark Office date stamp sets forth the date of receipt of:

Applicant: Jung W. Lee
Appl. No.: 10/627,455
Filing Date: July 25, 2003
Title: SPHERICAL ROTARY VALVE ENGINE ASSEMBLY

Enclosed:

1. Transmittal Form
2. Fee Transmittal
3. Petition for Extension of Time
4. Credit Card Payment Form
5. Response to Office Action
6. Certificate of Mailing

Attorney Docket No.: JWLE-01000US0 Attorney: Brian I. Marcus
Mailing Date: December 16, 2005

Vierra Magen Marcus Harmon & DeNiro

File: JWLE-01000US0
Atty:
Dkt:
Final Due Date:
Atty: BIM Dkt: Verify